National Science Foundation

National Science Foundation
Integrative Hybrid and Complex Systems (IHCS) Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-7564
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 07, 2008 Full Proposal Window: January 7, 2008 - February 7, 2008 Supplement Deadline Date: April 1, 2008 REU/RET Supplements Full Proposal Window: September 7, 2008 - October 7, 2008 The submission windows for unsolicited proposals in the ECCS Division are between September 7-October 7 and January 7-February 7. Proposals submitted before or after (5 p.m., local time) the submission windows will be returned unreviewed. These submission windows do not apply to workshop proposals or proposals for Small Grants for Exploratory Research (SGER). The Division deadline for Research Experiences for Undergraduates (REU) and Research Experience for Teachers (RET) Supplements is April 1st. The ECCS Division discourages multiple proposals by the same PI and/or Co-PI within the same submission window.
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

The Integrative, Hybrid and Complex Systems (IHCS) program supports innovative research in areas that integrate device concepts and systems principles in the design, development and implementation of new nano/micro/macro hybrid and complex systems with engineering solutions for domain specific applications. Hybrid systems incorporating both continuous and discrete representations are of increasing interest in the study of distributed networks. Proposals are sought that address fundamental research issues

associated with modeling, design, simulation and development of engineering systems with applications in telecommunications, homeland security, biotechnology and manufacturing. Examples include:1. Miniature implantable devices that combine sensors, actuators, computational algorithms and microcircuits for biomedical applications ranging from drug delivery to microsurgery; 2. Wireless networks of handheld or wearable computing devices that incorporate microsystem transmitters, receivers, antennas and sensors, and constitute a complex distributed network with high bandwidth and high information-transfer rates; 3. Optoelectronic and photonic integrated circuits, scalable in density and functionality, for chip-based wavelength division multiplexing; 4. Power grids and systems designed to be reliable, efficient and environmentally sustainable; 5. Control methods for image-guided therapy and surgery; and 6. Cyberengineering systems that integrate the physical layer (devices,sensors) with the informational layer (communication networks, computational intelligence, decision/control) to optimize the performance of distributed systems. Such integrative systems offer new challenges in basic research and promise for future applications. Proposals for the Integrative, Hybrid and Complex Systems program may involve collaborative research among investigators to capture the breadth of expertise needed for such multidisciplinary integrative activities. Areas of opportunity are announced and updated on the ECS Division home page. In addition, researchers are invited to propose, and are encouraged to discuss, with the IHCS Program Directors, potential innovative systems and associated areas of research. Areas of current interest include: hybrid and complex systems at the nano, micro and macro scales. Some of the technology areas include: *Machine Intelligent Systems, *System-on-a-Chip, *System-in-a-package, *Organic and Silicon-based Hybrid Systems, *Quantum Information Systems, *Optical and Wireless Communications Systems, and *Cyberengineering Systems

Link to Full Announcement

NSF Program Description 05-7564 -

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13381

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=1255

National Science Foundation
Electronics, Photonics and Device Technologies (EPDT) Modification 6

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1517
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 07, 2008 Full Proposal Window: January 7, 2008 - February 7, 2008 Supplement Deadline Date: April 1, 2008 REU/RET Supplements Full Proposal Window: September 7, 2008 - October 7, 2008 The

	submission windows for unsolicited proposals in the ECCS Division are between September 7-October 7 and January 7-February 7. Proposals submitted before or after (5 p.m., local time) the submission windows will be returned unreviewed. These submission windows do not apply to workshop proposals or proposals for Small Grants for Exploratory Research (SGER). The Division deadline for Research Experiences for Undergraduates (REU) and Research Experience for Teachers (RET) Supplements is April 1st. The ECCS Division discourages multiple proposals by the same PI and/or Co-PI within the same submission window.
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

The Electronics, Photonics and Device Technologies (EPDT) program seeks to improve the fundamental understanding of devices and components based on the principles of electronics, photonics, magnetics, organics, electro-optics, electromechanics, and related physical phenomena. The program invests in advancing the frontiers of spin electronics, molecular electronics, bioelectronics, silicon nanoelectronics and beyond, nonsilicon electronics, flexible electronics, optoelectronics, microwave photonics, MEMS/NEMS, power electronics, and mixed signal devices. EPDT further supports related topics in quantum engineering and novel electromagnetic materials-based device solutions, RF integrated circuits, and reconfigurable antennas needed for telecommunications, telemedicine, and other wireless applications. ECCS will continue its support of tools for manipulation and measurement with nanoscale precision.Areas of interest include: * Bioelectronics * Flexible Electronics * MEMS/NEMS * Micromagnetics * Microelectronics * Microwave Photonics * Molecular Electronics * Nano-Electronics/Photonics/Magnetics * Optoelectronics * Power Electronics * Sensors and Actuators * Spin ElectronicsECCS will provide additional emphasis on emerging areas such as: * Diagnostic and Implantable Devices

Link to Full Announcement

NSF Program Description 05-1517 - http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13379

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=7634

National Science Foundation
Materials Processing and Manufacturing
Modification 5

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1467
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 15, 2008 Full Proposal Window: January 15, 2008 - February 15, 2008 Full Proposal Window: September 1, 2008 - October 1, 2008 ALL proposals MUST be received at NSF by 5 pm user's local time
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted (i.e., open to any type of entity above)

Description

Novel processing methodologies or the processing of new materials can open up opportunities for new product development, for research leading to next-generation machines, for improvements in product performance and cost, and for minimizing the environmental impact through the complete life-cycle. The MPM Program advances the fundamental knowledge base that is needed for the realization of desired product attributes through the application of the systematic integration of processing - material- performance relationships. It supports analytical and experimental research that leads to the generation of such fundamental knowledge. MPM also supports research activities that incorporate connectivity of this materials processing knowledge to sensing systems for process control. Broad themes include:*Environmentally Benign Manufacturing – the role of materials processing within the life cycle for avoidance of waste. *Virtual Manufacturing – modeling and simulation of processes for predictive capability of performance and productibility. *Novel Hybrid Processing – new processes that modify, combine, and/or merge existing processes (e.g., deformation, phase-change, consolidation, additive, surface modification) or sequences in order to optimize materials and energy use to achieve net shape products and complex multi-scale, multi-functional products with superior quality and performance attributes. Some examples of areas of interest include: *Novel netshape processing to reduce material and energy waste, *Integration of dissimilar materials at micro/meso/macroscales, *Fabrication of bio-compatible materials and complex structures (implants, restoration), *Processing of multi-layer and/or multi-component materials for enhanced mechanical, electrical, biological functionality.

Link to Full Announcement

NSF Program Description 05-1467 -
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13344

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=7640

National Science Foundation
NanoManufacturing
Modification 5

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1788
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 15, 2008 Full Proposal Window: January 15, 2008 - February 15, 2008 Full Proposal Window: September 1, 2008 - October 1, 2008 ALL proposals MUST be received at NSF by 5 pm user's local time
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

The NanoManufacturing Program was established in 2001 to promote fundamental research and education at the nanoscale, and to transfer developments in nanoscience and nanotechnology discoveries from the laboratory to industrial application with prominent societal impacts. The program emphasizes scale up of nanotechnology for high rate production, reliability, robustness, yield, efficiency and cost issues for manufacturing products and services. NanoManufacturing capitalizes on the special material properties and processing capabilities at the nanoscale, and promotes integration of nanostructures to functional micro devices and meso/macroscale architectures and systems, as well as the interfacing issues across dimensional scales. The program covers interdisciplinary research and promotes multi-functionality across all energetic domains, including mechanical, thermal, fluidic, chemical, biochemical, electromagnetic, optical etc. The focus of NanoManufacturing is in a systems approach, encompassing nanoscale materials and structures, fabrication and integration processes, production equipment and characterization

instrumentation, theory/modeling/simulation and control tools, biomimetic design and integration of multiscale functional systems, and industrial application. The program places special emphasis in NanoManufacturing education and training of the workforce, involvement of socio-economic sciences, addressing the health, safety and environmental implications, development of manufacturing infrastructure, as well as outreach and synergy of the academic, industrial, federal and international community.

Link to Full Announcement

NSF Program Description 05-1788 -
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13347

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=7641

National Science Foundation
Infrastructure Materials Applications and Structural Mechanics Modification 6

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1635
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 15, 2008 Full Proposal Window: January 15, 2008 - February 15, 2008 Full Proposal Window: September 1, 2008 - October 1, 2008
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted

Description

The Infrastructure Materials and Structural Mechanics programs supports research to advance the knowledge base on: properties and application of advanced structural materials; repair, retrofit, and rehabilitation of structural components; and durability of structural materials and components, including effects derived from interaction with the natural and constructed environment; innovations and constitutive characterization of new construction materials; and the behavior of infrastructure materials and structural components.

Link to Full Announcement

NSF Program Description PD-05-1635 -
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13357

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=7661

National Science Foundation
Power, Controls and Adaptive Networks
Modification 3

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1518
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 07, 2008 Full Proposal Window: January 7, 2008 - February 7, 2008 Supplement Deadline Date: April 1, 2008 REU/RET Supplements Full Proposal Window: September 7, 2008 - October 7, 2008 The submission windows for unsolicited proposals in the ECCS Division are between September 7-October 7 and January 7-February 7. Proposals submitted before or after (5 p.m., local time) the submission windows will be returned unreviewed. These submission windows do not apply to workshop proposals or proposals for Small Grants for Exploratory Research (SGER). The ECCS Division discourages multiple proposals by the same PI and/or co-PI within the same submission window.
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted

Description

The Power, Controls and Adaptive Networks (PCAN) program supports creative research and education underlying the analysis and design of intelligent engineering networks for control, communications, computation and energy. Proposals leading to improved methods for multi-scale modeling, learning, optimization, reliability, security and robustness of complex dynamical systems are of interest. Distributed networks occur in telecommunications, Internet, power and energy, transportation and manufacturing. Adaptive, learning and self-organizing principles offer potential for improved performance of networks with uncertain models and changing characteristics. Topics of interest include adaptive dynamic programming, reinforced learning, pattern recognition, and intelligent agents to develop brain-like networked architectures performing real-time learning using sensors and actuators. The program also invites proposals dealing with control theory in bioelectronics, including molecular biology, genomics, biotechnology and robotics. In addition, areas of interest include computational video and imaging, integrated sensor networks, autonomic

communication networks, quantum computing, embedded control, and measurement and control of micro-scale and nano-scale devices and systems. The program also covers all aspects of transmission, distribution and generation of electric power, including operations, communications, reliability, electric machines, power electronics and drives. The program further includes integration of renewable and distributed energy systems, such as fuel cells, solar cells, wind power and micro-turbines into large power networks. Understanding of regulatory and economic structures for power grids and critical infrastructures is needed to support the 21st Century economy. The program supports the development of innovative architectures for multi-scale modeling. Areas of interest include: * Adaptive Dynamic Programming * Embedded, Distributed and Adaptive Control * Power and Energy Networks * Quantum Modeling and Simulation of Devices and Systems * Sensing and Imaging Networks * Telerobotics

Link to Full Announcement

NSG Program Description http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13380

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=10666

National Science Foundation
Manufacturing Enterprise Systems
Modification 3

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-1786
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 15, 2008 Full Proposal Window: January 15, 2008 - February 15, 2008
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted

Description

The Manufacturing Enterprise Systems program addresses research on design, planning and control of operations in manufacturing enterprises, from shop floors to the associated procurement and distribution supply chains. Contributions should impact and extend the range of analytical and computational techniques addressed to extended enterprise operations, and/or advance novel models offering policy insights or the prospect of implementable solutions. Among the categories of research supported are the following: * Analytical and computational tools and systems for planning, monitoring, control, and

scheduling of manufacturing and distribution operations * Methods for personnel planning * Methods for evaluation, comparison, and optimization of designs for manufacturing systems and facilities, especially in the presence of massive uncertainty and risk about the operating environment. Recent topics funded: * Planning and control of manufacturing and distribution operations in highly distributed global environments (Scalable Enterprise Systems solicitation) * Real-time manufacturing process control and root-cause analysis * Real-time supply chain control * Design of reverse manufacturing systems and supply-chains * Personnel rotation and scheduling with consideration of learning and forgetting * Reliability and yield analysis in nano-fabrication

Link to Full Announcement

NSF Program Description PD-05-1786 - http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13342

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=10771

National Science Foundation
Operations Research
Modification 3

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	PD-05-5514
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Feb 15, 2008 January 15, 2008 - February 15, 2008 January 15 - February 15, Annually Thereafter September 01, 2008 - October 01, 2008 September 1 - October 1, Annually Thereafter
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted

Description

The Operations Research program (OR) seeks to support research leading to fundamental advances in the science of models and algorithms arising in the study of operations of large scale systems. This program will support research in three main directions: optimization, simulation and stochastic models, and novel enterprise-wide models based on integrating OR methodology with advanced high-end computing. Overall emphasis of the program is on research that improves modeling and computational capabilities in OR. Proposals must also

make the case for potential impact on relevant engineering, managerial and/or scientific applications.

Link to Full Announcement

NSF Program Description 05-5514 -
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13341

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=10775

National Science Foundation
Postdoctoral Fellowships in Polar Regions Research Grant

Document Type:	Grants Notice
Funding Opportunity Number:	08-501
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jan 11, 2008 Fellowship proposal deadline 01/11/2008 and 08/18/2008 Travel Grant Proposals Accepted Anytime. See full document No travel proposals will be accepted before the January 2008 deadline.
Expected Number of Awards:	5
Estimated Total Program Funding:	$1,000,000
Award Floor:	$75,000
CFDA Number:	47.078 -- Polar Programs
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Others

*Organization Limit: Proposals may only be submitted by the following: Each candidate must identify one or more U.S. sponsoring scientists and a U.S. host organization before submitting a proposal. Examples of appropriate U.S. host organizations are colleges and universities, government and national laboratories and facilities, and publicly and privately sponsored organizations such as nonprofit institutes, museums, and for-profit organizations. *PI Limit: Fellowships: The fellowship candidate must submit his or her fellowship proposal directly to NSF. Fellowships will be awarded to individuals. Eligibility limitations apply. Please see the Additional Eligibility Information section of this solicitation for further information. Travel Grants: The fellowship candidate must submit his or her travel grant proposal directly to NSF. Travel awards will be made to individuals.

Description

The Postdoctoral Fellowships in Polar Regions Research program supports training and research for recent doctoral degree recipients in any aspect of scientific study of the Antarctic and/or the Arctic within the Office of Polar Programs (OPP) program areas. The program also provides travel grants to those eligible for fellowships for the purpose of meeting prospective mentors and colleagues, presenting seminars, discussing mutual research and/or education interests, evaluating facilities and professional development opportunities, and initiating collaborative relationships. The fellowship program develops and trains recent Ph.D.s (especially those new to polar research) with concomitant goals to promote scientific research in polar regions; support innovative research in emerging areas; encourage interdisciplinary research; support and promote awareness of International Polar Year research and education activities; foster activities that create broader impacts for science and society; and increase the participation of under-represented groups in polar regions research.

Link to Full Announcement

NSF Publication 08-501 -
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08501

http://www.grants.gov/search/search.do?&mode=VIEW&flag2006=true&oppId=15667